Why I’m doing this talk

- I wasn’t breastfed – I was early & breech; mom smoked, got bad advice, had good instincts
- 1st career: physical education & sports
- Found LLL shortly before 1st child’s birth
- Advocate for women and babies – healing
- Three children, 4 grandchildren, 13 houses in 9 cities / 2 countries
- MPH candidate – in the home stretch now

Objectives

- Discuss historic and current beliefs and practices regarding infant swaddling
- Discuss ethical, political and cultural issues related to swaddling
- Discuss research on benefits and harms of infant swaddling

Questions asked

- Historically, why was swaddling done?
  - What is the current appeal of swaddling?
  - When and where is swaddling combined with cradleboards or cradles?
  - What were common objections to swaddling?
  - What alternatives have been used instead of swaddling for similar purposes?
  - What are the evidence-based benefits to PARENTS? Or STAFF?
- When is swaddling done?
  - What variations exist, and why?
  - How long does the baby remain swaddled (per session, per day, total in months or years)
  - Who decides when to end swaddling (per session, per day, total in months or years)
- What are the evidence-based responses of the INFANT to being swaddled?
  - What is the relationship between swaddling and SIDS?
- What is the impact of swaddling on BREASTFEEDING?

Origins: transportation

- Archaeological records suggest that swaddling first developed around 4000 B.C. in Central Asia with use of the back-pack cradle board by migrating peoples
- As desertification progressed, migration from region to region became a relatively permanent way of life

Why are babies swaddled?

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  - What is the current appeal of swaddling?
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  - What alternatives have been used instead of swaddling for similar purposes?
  - What are the evidence-based benefits to PARENTS? Or STAFF?
Origins: warmth & limb growth

- "Swaddling clothes described in the Bible consisted of a cloth tied together by bandage-like strips.
- After an infant was born, the umbilical cord was cut and tied, and then the baby was washed, rubbed with salt and oil, and wrapped with strips of cloth.
- These strips kept the newborn child warm and also ensured that the child's limbs would grow straight."

Swaddling was meant to bind

- "A child lying stiff in swaddling clothes was unable to wave its hands and feet in the air, incapable of reaching out to grasp some dangled object, forbidden by its bonds to respond to maternal playfulness.
- And if mothers tied their children from head to feet so that they couldn't respond to tickling, clucking, and caressing, it must mean the mothers had little interest in such things in the first place."

Tudor times: for limb growth

- "During Tudor times, swaddling involved wrapping the new baby in linen bands from head to foot to ensure the baby would grow up without physical deformity.
- A stay band was attached to the forehead and the shoulders to secure the head.
- Babies would be swaddled like this until about 8 or 9 months."

Beliefs about babies

- Before 1700's, parents barely raised their children (by our standards) – neglect was rampant
- Infant mortality was high
- Names given to infants were "temporary" until the child reached ~2 years then "really" named
- Upbringing was based on fear

Galen's advice: toughen the baby

- "The newborn infant, then, free from defect in his entire constitution, should first be powdered moderately and wrapped in swaddling clothes, in order that his skin may be made thicker and firmer than the parts within.
- For during pregnancy everything was equally soft, since nothing of a harder nature touched it from without, and no cold air came in contact with it, whereby the skin would be contracted and thickened, and would become tougher and denser than it was before and than the other parts of the body.
- But when the baby is born, it is necessarily going to come in contact with cold and heat and with many bodies harder than itself. Therefore it is appropriate that his natural covering should be best prepared by us for exposure.
- The newborn was also "salted" with soda ash to harden his skin for the strange extraterranean life. Swaddling and infant salting after the manner of the Greeks and Romans served as the model of infant care practice for some 1,500 or more years.

17th century: Assoc. with neglect

- "There was an association of neglect with swaddling, especially in regard to wet-nurses who would leave babies in their care swaddled for long periods without washing or comfort them"
- "All the doctors complain about how parents permit children to stew in their own excrement for hours on end, tightly wound in swaddling clothes; about how children left unattended before the hearth perish when their garments catch fire; and about how unguarded infants would be attacked and eaten by the barnyard hogs."

Note the skull next to the baby

Swaddled: A Historical, Cultural, and Lactational Perspective
Late 18th century: Enlightened parenting
- Swaddling diminished in England & France
  - Replaced by alcohol and opium to sedate infants
- Persisted in Eastern Europe, Middle East, Lapland, Japan, North American Indians
- More common in cold/or dry climates
- Rare in warm, humid climates (↑ infections)

1693: John Locke objects
- “John Locke, in his 1693 publication Some Thoughts Concerning Education, became a lobbyist for not binding babies at all.
- This thought was very controversial during the time, but slowly gained ground, first in England and later elsewhere in Europe.”

1747: William Cadogan, MD
- Protested over-dressing of infants in many layers of tight swaddling blankets
  - “The mother who has only a few rags to cover her child loosely, and little more than her own breast to feed it, sees it healthy and strong, and very soon able to shift for itself, while the puny insect, the hair and hope of a rich family, lies languishing under a load of finery that overpowers his limbs, abhorring and rejecting the dainties he is crammed with, till he dies a victim to the mistaken care and tenderness of his fond Mother.”
  - “…besides the mischief arising from the weight and heat of these swaddling-cloaths, they are put on so tight, and the Child is so cramped by them, that its bowels have not room, nor the limbs any liberty, to act and exert themselves in the free easy manner they ought.”

1762: Rosseau Emile: Or, On Education
- Warned against swaddling clothes
- Claimed the newborn baby needs freedom of movement
- Said infants who were not restrained became stronger and developed better bodily proportions
- Rosseau, Jean-Jacques. Emile: Or, On Education. 1762.
1971: Prevalence

- 139 societies studied by Barry & Paxson
  - 51.8% practiced some form of infant restraint
  - 20.9% used cradleboards
- 19th and 20th century: drugs to pacify infants
  - Paregoric (Brand name: Camphorated Tincture of Opium)
  - Alcohol
  - Gripe water
  - Antihistamines and children's cold medicines

Cradleboards – North America

- Navajo, Cree, Ojibway, Shoshone, others
- "They were made for discipline, we would wrap the baby really tight, by doing so, and he learned not to cry so much."
  - Maria Lopez, Cheyenne bead worker, El Reno, Oklahoma
- "It was common practice to cradleboard newborn children until they were able to walk, although many mothers continued to swaddle their children well past their first birthday."

www.nativecradleboards.com/

- "Natives believe the flat boards will give a baby a strong, straight back, and that a soft supporting pad will help the infant form a nice rounded head. The Cradleboard is smudged with prayers, songs and good thoughts for the baby."

Sandbag babies – rural China

- April 08, 1990 (By Cox News Service)
- BEIJING — The practice is horrifying — but only to outsiders. Millions of babies along the Yellow River are tied up in bags of sand, only their heads peeping out, and left completely alone for most of each day.
- A major reason the babies are kept in the sandbags, red sacks similar to flour bags, is to enable both parents to go out and work in the fields without having to worry about the infants. The family returns at midday to eat and the mother nurses the baby, still in the sandbox.
- Otherwise, it is left alone from morning to evening. When the parents are at home the baby usually is taken out of the sandbag only when the sand is changed. When the baby is 1 to 1 1/2 years old the parents start taking it to the fields while they work.

Research on effects of swaddling

Effects of swaddling on adults

- Who is willing to BE swaddled?
- Get a scarf/shawl and caregiver(s)
  - Swaddlee: put arms down at sides
  - Caregiver: wrap shawl snugly around her body, tie in back, stay nearby
- Swaddle: notice YOUR feelings
- Stay swaddled like this for 15 minutes or until...
Swaddling: A Historical, Cultural, and Lactational Perspective

Maintain warmth?

- Swaddled VLBW babies in incubators were warmer than non-swaddled (no STS)
  - "...can be helpful in regulating temperature but can also cause hyperthermia when misapplied"

Breastfeeding is more effective

  - And many more....

Reduce pain?

- As effective as containment during heel stick
  - Less effective than pacifiers after heel stick
    - "Swaddling was not a rapid soother of pain-elicited distress, it was not followed by reduction of crying nor return of HR to base levels at 2 weeks of age, and it did not result in complete cessation of crying at 2 months."

Breastfeeding is more effective

    - And many more....

Reduce "excess crying?"

- "For older babies, swaddling did not bring any benefit when added to regularity and stimuli reduction in baby care, although swaddling was a beneficial supplementation in excessively crying infants <8 weeks of age."
What exactly IS “excess crying?”

- “Often, excessively crying infants are not used to falling asleep on their own. These infants need an opportunity to learn this and may need to cry themselves to sleep for 15 to 30 minutes.
- Some infants persist in crying for more than 30 minutes, and for these babies it is suggested that the parents offer some consolation without taking the child out of the bedroom.
- If an infant remains inconsolable, parents should begin again the cycle described previously (i.e. take the infant out of bed, feed them, and so forth).
- Within this regular pattern, the infant is fed shortly after waking up, since a well-rested infant drinks adequately and a well-fed infant is able to play on their own contentedly until they become tired.
- Upon the first signs of weariness, the infant should be put to bed while still awake. Intervals between daytime feeds are preferably two to four hours.
- Further advice to help the child to fall asleep on their own
  - Offer a substantial boundary by tightly tucking the baby in with a sheet and blanket (never a duvet), up to the chin, while on their back and with the feet reaching the footboard.
  - During the first one to two days parents need to accept that an infant may cry for about 15 to 30 minutes before falling asleep.

STS and BF are more effective

- “Babies kept in cots cried significantly more than those kept skin-to-skin with the mother.
- Keeping the baby skin-to-skin with the mother preserves energy and accelerates metabolic adaptation and may increase the well-being of the newborn.

Reduces arousal? 😊 or 😞?

- “In both experiments the infant groups clearly slept more when swaddled and also showed fewer motor responses to the air stream stimulus. This decrease in motor reactivity occurred at all levels of prestimulus heart rate and was not simply a reflection of increased sleep when swaddled. Furthermore, in both studies there were more startle responses in the free condition.” (N = 8 female formula-fed infants 2-4 days old)
- “Swaddling has a significant inhibitory effect on progression of arousals from brainstem to full arousals involving the cortex in QS. Swaddling decreases spontaneous arousals in QS and increases the duration of REM sleep, perhaps by helping infants return to sleep spontaneously, which may limit parental intervention.” (x13 males & female infants, 34-180 days, feeding method not stated)
- Gerard, C. M., Harris, K. A., & Thach, B. T. (2002). Spontaneous arousals in supine infants while awake. Intervals between daytime feeds are preferably two to four hours.

Reduced arousal = ↑SIDS risk

- “Breast fed infants are more easily aroused from AS at 2-3 months of age than formula fed infants. This age coincides with the peak incidence of SIDS.”
- “Infants in the naive to swaddling group exhibited decreased spontaneous cortical arousal, similar to responses observed in future victims of sudden infant death syndrome.” (27 breastfed male & female infants @ 3-4 weeks & 3 mos.)

Independent risk factor for SIDS

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Breastfeeding is safer
- “overall risk of SIDS twice as great for formula-fed infants compared with breastfed infants.”
- “This study shows that breastfeeding reduced the risk of sudden infant death syndrome by approximately 50% at all ages throughout infancy.”

Accept supine sleep?
- “The majority of infants accepted swaddling while supine, including 78% of infants who slept prone at home. Acceptance decreased with increasing age.”
- Older infants including usual prone sleepers generally accept a form of swaddling that has minimal respiratory effects. The reintroduction of swaddling, without restricting hip movement or chest wall excursion, combined with supine sleeping, may promote further sudden infant death syndrome reduction.”

Reduce Prone Sleep = (↓ SIDS)
- “…swaddling may be protective for back-sleeping infants by preventing them from moving into dangerous situations (such as rolling to prone) but harmful for those who sleep on their stomach, restricting a prone infant from moving to a position of safety.”
- Spontaneous turning to the prone position from a supine or side position during sleep is associated with an increased risk for SIDS.
- Immobilization of infant arms and legs by swaddling should reduce the chances that an infant will cover his head and face with bedding, a well-established risk factor for SIDS in which overheating and asphyxia maybe causal factors.”

Breastfeeding works better
- “without instruction, the routinely bedsharing breast feeding mothers almost always placed their infants in the safe supine infant sleep position, probably because it is difficult, if not impossible, to breastfeed a prone sleeping infant”

Risk: Neonatal weight loss
- “…swaddled babies who had experienced a 2-h separation period after birth and then were reunited with their mothers tended to have a delayed recovery of weight loss compared to those infants who were exposed to the same treatment but dressed in clothes.
- Furthermore, swaddled babies who were kept in the nursery and received breast-milk supplements had a significantly delayed recovery of weight loss after birth when compared to those infants ingesting only breast-milk.
- On day 5, regression analysis of predicted weight gain in the exclusively breastfed infants indicated a significant increase per 100 ml breast-milk (59 g), compared to the predicted weight gain on day 5 per 100 ml supplement in the swaddled babies (14 g) (P<0.001)”

Risk: Hip dysplasia
- Although we appreciate that swaddling may sometimes be an effective technique to decrease crying and promote sleep in newborns, there is concern that it may lead to an increase in hip dysplasia…swaddling has been found to be a risk factor for DDH.
- “Prospective studies have shown that: 1% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untraced in most hips by 2 to 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”

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Risk: Chest/respiratory restriction

- “The incidence of pneumonia and upper respiratory infections (URI) was assessed by retrospective chart review in hospitalized Turkish infants. They found that infants who were completely swaddled for 3 months had a 4-fold increased incidence of pneumonia and URI. Tight binding could restrict chest wall excursion, resulting in more frequent or complicated pneumonia.
- We do not have comparison data on unwrapped infants.
- Long-term studies, including overnight sleep studies of swaddled infants and respiratory effects, would be beneficial, since grunting and increased respirations did appear at higher pressures.”

Touch and Proximal Care

- Babies need to be touched – a LOT
- Separating babies increases stress in both mother and baby
  “Proximal care parents held infants for 15 to 16 hours per 24 hours and coslept with them through the night more often than other groups…Infant demand care, as practiced by proximal care…is associated with less overall crying per 24 hours in the early weeks.”

Do the “5 S’s” actually work?

- “One method for calming infants, referred to as The Happiest Baby (THB) method, is based on the hypothesis that actions mimicking conditions in the womb will trigger a calming reflex”
- “The behavioral intervention, when provided via videotape, does not seem to be efficacious in decreasing total crying among normal infants.”

Why swaddle at all?

- “Breastfeeding to comfort a crying infant is a strong predictor of partial (overall) duration and is rated as a highly effective calming method by parents.”

Breastfeeding works better!

- TOUCHING is vital to babies
- Soothes pain (mom, breastfeeding, milk)
- Accepts supine sleep next to BF mother
- Normal respiratory function esp. in STS
- ↓ crying if nursed to sleep
- ↓ colic with exclusive breastfeeding
- ↑ arousal protects against SIDS
Routine vs. last-resort strategy?

- “Advice for routine care of healthy babies must have as strong an evidence base as for babies who are ill, since healthy babies are far more common and the potential for unsuspected harm is relatively great – a lesson bitterly learned for infant sleeping position.”
  – Peter Fleming

Summary

- Swaddling was used for transportation, bone development, reduced arousal, suppression of crying, warmth, restriction of movement
- Swaddling has documented risks
- Swaddling is an independent risk factor for SIDS
  – Overheating, reduced arousal
- Swaddling deprives baby of skin / human contact

Thank You!